THE CRUSHED STONE JOURNAL

Official Publication
The National Crushed Stone Association

In This Issue—

Uses for Stone Screenings

Manufacturers' Division Holds Annual Dinner Meeting

Trade Practice Conference Question Box

Our Coming Annual Convention

OCTOBER, 1929

WHY HAVE LOSSES

Poor Grading—High Overhead—Troubles

Ask the following stone producers why they are using NIAGARA ROLLER BEARING SCREENS year after year

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Solvay Process Company	Syracuse, N. Y.
Rock-Cut Stone Company	Auburn, N. Y.
Rock-Cut Stone Company	Ballina, Madison Co., N. Y.
Rock-Cut Stone Company	Jamesville, N. Y.
Rock-Cut Stone Company	Lacona, N. Y.
Rock-Cut Stone Company	Watertown, N. Y.
Mohawk Limestone Products Company	Mohawk, N. Y.
Mohawk Limestone Products Company	Jordanville, N. Y.
Mohawk Limestone Products Company	Mount Vision, N. Y.
BUFFALO Crushed Stone Company	Buffalo, N. Y.
Federal Crushed Stone Company	Cheektowaga, N. Y.
Genesee Stone Products Company	Stafford, N. Y.
LeRoy Lime and Crushed Stone Company	LeRoy, N. Y.
Ribstone Concrete Products	LeRoy, N. Y.
Dolomite Products Company	Rochester, N. Y.
General Crushed Stone Company	Oaks Corners, N. Y.
General Crushed Stone Company	North LeRoy, N. Y.
General Crushed Stone Company	Glenmills, Penna.
Wagner Quarries	Sandusky, Ohio
Wagner Quarries	Castalia, Ohio
Dolomite, Inc.	Maple Grove, Ohio
Herzog and Sons	Forest, Ohio
Ohio Blue Limestone	Marion, Ohio
National Lime & Stone Co.	Spore, Ohio
National Lime & Stone Co.	Carey, Ohio
National Lime & Stone Co.	Lewisburg, Ohio
National Lime & Stone Co.	Bluffton, Ohio
Belle Center Stone Co.	Belle Center, Ohio
Higgins Stone Company	Bellevue, Ohio
Lake Erie Limestone Company	Youngstown, Ohio
Lake Erie Limestone Company	Lowellville, Ohio
Lake Erie Limestone Company	Hillsville, Pa.
Lima Stone Company	Lima, Ohio
Spencer Stone Company	Spencerville, Ohio
Union Limestone Company	Youngstown, Ohio
Ohio Marble Company	Piqua, Ohio
C. C. Beam	Melvin, Ohio
Rock Products Company	Toledo, Ohio
France Stone Company	Holland, Ohio
France Stone Company	Monroe, Mich.
Swint Stone Company	Fremont, Ohio
J. E. Baker Company	Bainbridge, Lancaster Co., Pa.
J. E. Baker Company	White Hall, Baltimore, Md.
New Castle Lime & Stone Company	New Castle, Pa.
New Castle Lime & Stone Company	Dunbar, Pa.
Lehigh Stone Company	Ormrod, Pa.
Stowe Trap Rock Company	Pottstown, Pa.
Carbon Limestone Company	Hillsville, Pa.
Blue Stone Quarry Company	Gwynedd Valley, Pa.
Whiterock Quarries	Pleasant Gap, Pa.
Connecticut Quarries Company	Rocky Hill, Conn.
New Haven Trap Rock Company	New Haven, Conn.
Edward Balf Company	Hartford, Conn.
John S. Lane and Son	Westfield, Mass.
West Roxbury Trap Rock Company	West Roxbury, Mass.
Old Colony Crushed Stone Company	Quincy, Mass.
Rowe Contracting Company	Malden, Mass.
Simbrico Stone Company	West Roxbury, Mass.
Casper Stolle Quarry & Construction Co.	East St. Louis, Ill.
Consumers Company	Lemont, Ill.
Federal Stone Company	LaGrange, Ill.
Michigan Limestone & Chemical Company	Rogers City, Michigan
Biesans Stone Company	Winona, Minn.
Meshberger Bros. Stone Company	Berne, Ind.
Hy-Rock Products Company	Marengo, Ind.
Fanwood Stone Crushing & Quarry Co.	Fanwood, N. J.
Samuel Braen	Paterson, N. J.
Orange Quarry Company	West Orange, N. J.
Granite Rock Company	Logan, Calif.
Daniel Contracting Company	San Francisco, Calif.
Deitz Hill Development Company	Kansas City, Mo.
Rock Hill Quarries Company	St. Louis, Mo.
Texas Trap Rock Company	San Antonio, Texas
Dittlinger Lime Company	New Braunfels, Texas
James Stone Company	Corsicana, Texas
Franklin Limestone Company	Nashville, Tenn.
Gager Lime Company	Sherwood, Tenn.
John H. Wilson	Honolulu, Hawaii

CANADA

J. A. Bourbonnais	Vaudreuil, Que.
Canada Crushed Stone Corp.	Puslinch, Ont.
Coast Quarries	Vancouver, B. C.
Dufferin Construction Company	Innerkip, Ont.
Gordon Crushed Stone Company	Hagersville, Ont.
Thomas Langton Crushed Stone	Coldwater, Ont.
LaCie A. Desrosiers, Ltd.	Montreal, Que.
Puslinch Quarries, Ltd.	Puslinch, Ont.
Quinn Stone and Ore Company	Ft. William, Ont.
Rigand Granite Products Company	Rigand, Que.
Stone and Son	Ingersoll, Ont.
Standard Lime Company, Ltd.	Joliette, Que.
Walker Bros.	Thorold, Ont.
Warden King Company, Ltd.	Montreal, Que.

LET US FIGURE YOUR PROBLEMS

NIAGARA CONCRETE MIXER CO.

40 PEARL STREET

BUFFALO, N. Y.

Federal Trade Commission Issues Invitation for Trade Practice Conference for Crushed Stone Industry

The Federal Trade Commission has just recently issued an invitation to all members of the crushed stone industry to participate in a trade practice conference of the industry to be held at the Hotel Gibson, Cincinnati, Ohio, January 23, 1930, and every effort has been made to see that every firm in the United States producing crushed stone has received this information. It is possible, however, that some companies have been inadvertently overlooked and we are therefore reprinting in full below this invitation. We urgently suggest that all producers immediately advise the Federal Trade Commission as to whether or not they will find it possible to participate in the conference.

GENTLEMEN:

"A trade practice conference at which E. A. McCulloch, Chairman of the Federal Trade Commission, will preside, is called for the Crushed Stone Industry at the Hotel Gibson, Cincinnati, Ohio, Thursday, January 23, 1930, at 10 a. m.

"The purpose is to give all concerned an opportunity to participate in deliberations which are expected to result in efficiently eliminating from the Industry all practices which may be considered unfair, wasteful or otherwise bad for the Industry and the public. Among the practices thus far proposed for discussion are: Inducing breach of contract; misbranding; fraud and misrepresentation; secret rebates; price discrimination; defamation of competitor or disparagement of his materials; sales below cost; commercial bribery; inducing sales by other products; antidumping; enticement of employees; terms of sale.

"The proposal to discuss the foregoing subjects does not preclude the discussion of other or different matters. As experts in their line, men actively engaged in this industry are asked to define for the Commission such practices as they consider unfair and to assist in the formation of rules of business conduct intended to eliminate simultaneously on a given date the practices specified, and any other which the industry recognizes as bad, and may, by resolution, determine to abandon. In such conferences no charges are brought against individual concerns. The subjects discussed are intended to relate exclusively to practices or methods, not to persons using them. The effect, however, is to eliminate the claim sometimes advanced that one concern is justified in continuing such use as long as others do so.

"The receipt of this letter must not be taken to mean that those who are addressed or those who attend the conference are guilty of any unfair method of competition. Quite the contrary is true; for these conferences are usually urged and brought to successful termination by those in the industry who are obeying the law and who are protecting not only the industry, but the public as well."

Very truly yours,

(Signed) M. MARKHAM FLANNERY, *Director,*

Trade Practice Conferences.

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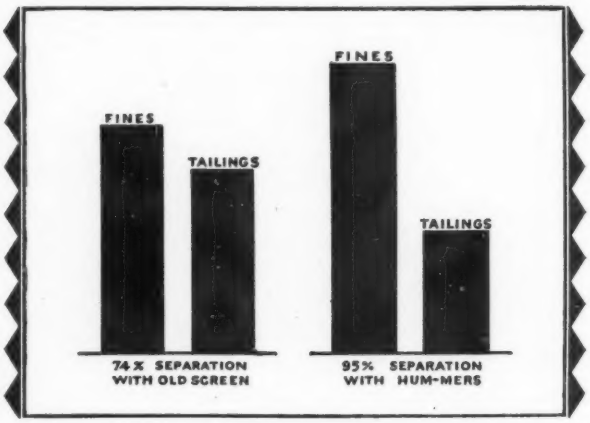
NOTE that the Hum-mer produced a 95% separation as compared to the former separation of 74%. This means that 21% of material formerly left in the tailings is now recovered by the Hum-mer.

Based on the former production of fine material, this is an increase in tonnage of more than 28%.

This is only one of hundreds of instances where the Hum-mer has proved its ability to make screening more profitable.



Screen vibration so positive, so powerful, that a man can stand upon the screening surface without diminishing the vibration is responsible for the wonderful sorting action obtained with the Hum-mer.

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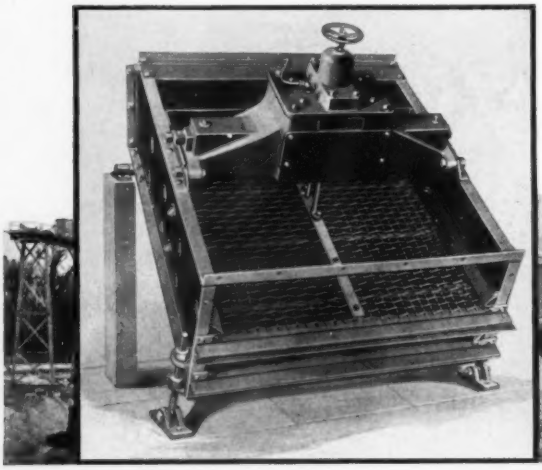

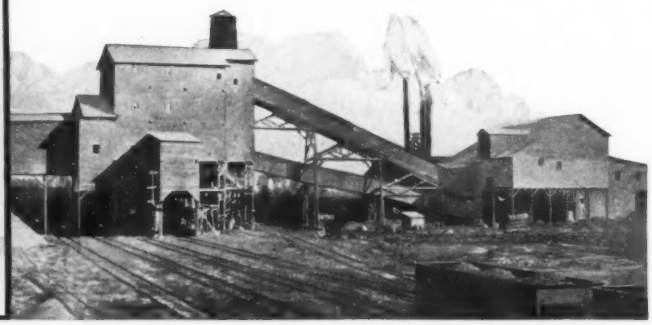

HUM-MER *Electric* SCREEN

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Uses for Stone Screenings

By A. T. GOLDBECK, *Director,*
Bureau of Engineering, National Crushed Stone Association

BY the term "stone screenings" is meant that portion of the product, including the dust of fracture, resulting from the screening of crushed stone through a fine mesh screen. The size of opening employed varies, depending upon the uses for the screenings, but it may be ¾, ⅝, ½, ⅜, ¼ in. or the No. 4 or other small size of screen. Screenings passing a ¼ or ⅜ in. screen are designated as "fine screenings" and those passing a ¾ in. as "coarse screenings." For certain purposes the dust is removed in which case the screenings are known as "dustless screenings." Fine, dustless screenings would extend from ¼ to ½ in. size and coarse, dustless screenings from ¼ to ¾ in. In each case approximately 15 per cent may be allowed to pass the ¼ in. screen. Dustless screenings are also known as "stone chips." Still further processing of stone screenings which may involve separation, regrinding, washing and re-combining results in "stone sand." This product is acquiring a growing use as a fine aggregate in concrete.

The present discussion deals with the various uses of the finer portions of the product of the crushing and screening operation. These uses may be listed as follows:

List of Uses for Stone Screenings

1. Fine aggregate in concrete, alone or in combination with sand.
2. Binder in waterbound macadam road construction.
3. Portion of the aggregate in bituminous concrete.
4. Cover material in surface treatment for roads.
5. Subgrade treatment under macadam, concrete and other types of roads.
6. Low cost road construction.
7. Shoulder maintenance.
8. Concrete block manufacture.
9. Miscellaneous uses in concrete.

Use of Stone Screenings in Concrete

Stone screenings may be used successfully as a fine aggregate in concrete provided care is taken in their manufacture to exclude any deleterious material. In the past, the necessity of excluding dirt, which is likely to be found in the fine dust of screenings, has not always been recognized as important and some failures have resulted, just as they have likewise resulted from the use of dirty natural sand. If screenings are sold for use as fine aggregate in concrete, they must be free of clay and any material other than stone particles.

Stone screenings differ from natural sand in their physical characteristics. Generally their gradation is characterized by a comparatively large amount of coarse fragments, considerable dust and a lack of intermediate sizes. Moreover, screenings are more angular than sand, for in the grinding processes which formed natural sand the particles have become more or less rounded. These two main differences in physical properties are important, and they must be taken into account when proportioning concrete. If they are not recognized, a harsh working concrete mixture, hard to place and hard to finish will be the result.

It has been the custom in the past to state the proportions of concrete in terms of arbitrarily selected volumes such as 1:2:4, 1:2½:5, etc. Mixtures such as these, which may be workable when natural sands are used may be entirely unsuited for use with stone screenings. Hence, it becomes important to use a method of proportioning which will give plastic concrete.

One of the best methods of determining the proper relation of screenings to coarse aggregate is by the use of small trial batches in which the ratio of fine to coarse is shifted until the right degree of workability is obtained. Still another way which has been found

to give satisfactory results is by the use of the so-called "fineness modulus" method described by the Portland Cement Association. This method involves making a screening test on both the fine and coarse materials proposed for use and by calculation, using the values for "fineness modulus" thus obtained, the proper proportion of fine aggregate in the mix is calculated. No matter what method of proportioning is used it will be found that with the average stone screenings it will be necessary to use more screenings and less coarse aggregate than can be used with natural sand mixes. Otherwise sufficient workability will not be obtained.

The Uses of Screenings for Curing Frost Boils

Frost boils occur when there is an excess of water present which cannot escape, due perhaps to an impervious substratum or to a frozen layer. When there is much traffic during a period of thawing, the excessive water quickly becomes mixed with the soil and the road becomes impassable. As a rule, such conditions exist only where there is clay. Frequently frost boils occur in spots where the clay is pocketed and at times also their length may extend over 200 or 300 feet. The cure is to be found in either removing the sticky, plastic clay and replacing it with granular material, such as stone screenings, or covering it with a sufficiently thick layer of screenings. At the same time thorough drainage must be provided in order that the excess water may not be allowed to accumulate. Not only screenings but crusher-run stone will also be found useful for this purpose.

Screenings for Use as a Filler in Waterbound Macadam

Screenings of 0 to ¼ in. size suitable for use as a filler for waterbound macadam construction should have approximately the following gradation:

	Per cent
Passing ½ in.	100
Passing ¼ in.	85 to 100
Passing No. 100	6 to 12

The above requirements may in some cases necessitate the removal of a portion of the fine dust. Fine dust, however, has the greatest cement value and is valuable in quickly binding together the coarse fragments. Screenings which are somewhat lacking in cementing value may be improved in this respect by the inclusion of more of the finer particles.

Screenings of the 0 to ¾ in. size are also used, particularly when the stone is quite soft, and the same limitations for dust, 6-12 per cent passing the No. 100 sieve are generally required.

The maximum per cent of wear permissible for screenings is placed at 8 per cent for base work and 6 per cent for surface course. It is also usually required that the screenings have good cementing properties.

Portion of the Aggregate in Bituminous Concrete

A portion of the aggregate in the bituminous concrete is composed of the finer fractions of the crushed stone included under the term screenings. The stone portion of bituminous concrete generally extends from ¼ in. size up to the maximum required by the specifications. The sizes supplied for this purpose are ¼ to ½ in., ¼ to ¾ in., ¼ to 1¼ in. and ¼ to 2½ in. The ¼ to ½ in. and the ¼ to ¾ in. sizes are included under the size commercially known as screenings. The ¼ to ½ in. material is generally required to have not more than 15 per cent passing the ¼ in. and the ¼ to ¾ in. material generally has the same limitation. For use in bituminous concrete, the percentage of wear is generally limited to not more than 6 per cent, and the toughness to not less than 6.

Cover Material for the Surface Treatment of Roads

Screenings have an abundant use in the surfacing treatment of roads with bituminous materials. For this purpose there seems to be no better available material than stone screenings. The sizes usually required are ¼ to ¾ in. and ¼ to ½ in. This material is generally known as dustless screenings or stone chips and should have not more than 15 per cent passing the ¼ in. screen. The larger size is for use with the heavier bituminous materials where it is desired to build up a comparatively thick surface mat, while the smaller size is best suited for the finer applications of light bituminous materials.

The angular shape of stone screenings is advantageous in that the surface mat is thus rendered more stable and crushed stone cover material is not greatly displaced to the side of the road under the action of traffic. Moreover, as a rule, there is not undue crushing of the stone due to traffic and the mat thus retains its life longer than when the cover material becomes readily powdered to dust. Naturally, the harder materials are less apt to be crushed than the softer. Screenings for surface treatment should, by all means, be clean.

Subgrade Treatment Under Macadam, Concrete and other Road Types

One of the uses for screenings which has not been fully recognized up to the present time is the treatment of subgrades under various high types of roads. It is now an established fact that granular materials, and particularly those of an angular nature, have a stabilizing effect when rolled into an unstable subgrade and the use of screenings would be particularly beneficial under road types involving the use of crushed stone bases.

If a broken stone layer is laid on a soft subgrade and rolled, quite naturally the soft subgrade material will be forced up into the voids of the broken stone layer and will seriously interfere with the stability of this layer, for the soft, wet clay acts much in the same way as a heavy lubricant. A comparatively thin layer of granular material, such as stone screenings, will serve as a blanket to prevent the upward intrusion of clay into the voids of the larger stone layer and it is suggested that 2 or 3 inches of compacted stone screenings be used for this purpose.

A layer of screenings used as a blanket course has the following advantages:

1. It insures that the entire depth of the broken stone base will be effective for supporting loads.
2. Finely granular material, such as screenings, has very little capillary action and therefore but very little moisture will be brought into contact with the broken stone base.
3. The base is thereby rendered more stable and better suited for carrying traffic at all seasons of the year.

In Figure I is shown the construction of a macadam road involving the use of screenings as a blanket course for the purpose of stabilizing the subgrade and adding to the load carrying capacity of the road. It is advisable to provide broad shoulder drains placed at frequent intervals in the shoulders to drain the moisture away from the broken stone layer as well as from the underlying subgrade. If such drains are not provided, it frequently happens that the road acts much like a ditch which has been back-filled with material in which there is a large percentage of voids. These voids become filled with water which later drains down into the subgrade and greatly softens it. Screenings for use in the above manner may be of the lowest grade produced and no harm is done if they are not composed entirely of stone. A small percentage of clay, not exceeding 5 per cent, will merely aid in binding the screenings together.

Low Cost Road Construction

Still another use for screenings is to be found in low cost road construction where there is no great amount of traffic and where it is desired that an earth road be improved at low cost. Screenings for this purpose may extend from ¾ or 1 inch down to and including dust or from ½ or ⅜ inch down to dust.

FIGURE 1

Use of Stone Screenings Under Macadam Road to Prevent Intrusion of Clay Subgrade

The construction procedure consists of first grading the earth road to a rather flat crown not exceeding ⅜ inch per foot and wherever drainage is necessary this should be provided. Screenings are applied in two layers, each 2 inches in loose depth. The spreading may be accomplished by controlling the opening of the tailgate and the speed of the truck and by later using hand-rakes or a grader followed by a roller, if this is available. If not available, traffic may be turned directly on the road. By the use of hand methods, or a grader, the soft spots are filled in and the road gradually compacts under traffic. Sprinkling with water will hasten compaction. The second layer should not be applied until the first layer has hardened and this will require up to ten days. The treatment of the second layer is similar to that of the first and the result is a smooth riding road capable of carrying a reasonable amount of traffic. This method of treatment has been successful for stabilizing sandy subgrades as well as clay subgrades.

Sometimes calcium chloride has been used successfully and in other places a very light oil is used for the purpose of keeping down the dust. It is undesirable to use a heavy oil which will build up a mat for this will prevent future dragging to keep the road in first-class shape.

FIGURE 2
Before Treatment With Stone Screenings

In Figures 2 and 3 are shown photographs, one taken before and the other after treatment with stone screenings, which in this case were crushed from trap rock. The improvement in traveling conditions is directly shown in this comparison and this excellent result has been accomplished at very low cost. Exclusive of grading and drainage, the total cost will not exceed 25 to 30 cents per square yard including the cost of the screenings, freight, unloading, trucking and spreading. This is a mileage cost of approximately $3,000 for an 18-foot surfacing.

FIGURE 3
After Treatment With Stone Screenings

Shoulder Maintenance

Still another use for stone screenings is in the maintenance of shoulders of high-class roads including concrete, bituminous concrete, bituminous macadam, vitrified brick, etc. Road shoulders are commonly a very great menace to traffic because during wet weather they are not adequate for supporting the weight of vehicles. If the shoulder material is of such a nature that it becomes very slippery in wet weather it is decidedly dangerous for vehicles to leave the road surface as they must in cases of emergency. Road shoulders should be available for use at all seasons of the year. Shoulders treated with screenings are not slippery and can be made very stable and capable of carrying traffic at such infrequent intervals as will be necessary. A comparatively thin layer of screenings from 2 to 3 inches in thickness, would be of very great value and where a rut has formed adjacent to the surfacing material this should be completely filled with screenings which would greatly delay the tendency for such a rut to again appear.

Screenings on the shoulder may be dragged from time to time to keep them in a smooth condition and as the necessity arises additional screenings could be applied and dragged to keep the shoulder in travelable condition. The advantages of this type of shoulder maintenance are:

1. A greater effective width of roadway is provided, for the screenings will form shoulders which are travelable even in wet weather.

2. As a consequence of the greater width the highway is safer for the shoulders are made available for emergency parking and emergency travel.
3. The appearance of the road is greatly improved because rutting and cutting up of the shoulders is avoided.
4. The cost of proper shoulder maintenance is decreased because of the less frequent attention necessary.
5. When shoulder ruts are eliminated from the side of the road the pavement is in less danger of breakage due to water seeping under the edges and due to vehicles climbing out of the ruts.
6. Maintenance with screenings is economical because just enough treatment may be given to carry the infrequent traffic on the shoulders and the treatment is suited to the needs of traffic but is not in excess of its needs.

The use of screenings for shoulder maintenance greatly improves high-class highways at small expense and treatment of this nature is very pleasing to the traveling public.

In Figure 4 is illustrated a cross-section making use of screenings for shoulder maintenance.

Concrete Block Manufacture

Stone screenings have been found to be of very great value in the manufacture of concrete products of various kinds, such as concrete block, tile, culvert rings, special building units and, in fact, any type of concrete unit which may be moulded and cured under plant conditions. Tests made under the auspices of the Portland Cement Association and the Concrete Products Association of Pittsburgh show conclusively that stone screenings have excellent qualities when made into the lean mixes shown to be economically suited for concrete block manufacture.

The following table of test results indicates the crushing strengths obtained from various mixtures of materials having varying characteristics. It will be noted that the mixtures using limestone screenings and limestone, in particular, had very high crushing strengths even with very lean mixtures. It has been found also that the use of limestone screenings is of very great assistance in the manufacture of the block.

The following quotations will be of interest in showing the regard in which screenings are held by those who have had experience in block manufacture.

From a paper by W. R. Warford, Warford Construction Co., Aurora, Ill.:

Aggregates cost per ton: Sand, 50c; pebbles, 50c; limestone screenings, $1.68; all purchased from commercial plants. The mixed aggregate used is:

1 cu. ft. screenings.
2 cu. ft. ¼ in. to ½ in. pebbles.
3 cu. ft. torpedo sand.

Twenty-two standard block are made per sack of cement. The limestone screenings contain 15% on ¼ in. and 60% passing 60-mesh. The great advantage of using limestone screenings is that it permits a wetter mix to be used without danger of slumping.

From a paper by C. J. Herzog, General Cement Products Co., Pittsburgh, which was on methods of reducing costs and it was listened to attentively because Mr. Herzog's company operates several plants and does a great deal of research work:

The grading of the aggregate used, Mr. Herzog said, had given the greatest opportunity for the reduction of the cost of manufacture. The rule was to use the coarsest aggregate that the appearance of the finished block would permit. It had been found profitable to include some limestone screenings in the complete aggregate to promote workability.

In three of the company's plants three aggregates were used and a great saving had been effected by a very close control of the fineness modulus of the mixed aggregate.

From a paper by Benjamin Wilk, Standard Building Products Co., Detroit:

2. Cost of cement is a matter of the number of blocks made per sack. Mr. Warford has told how, by careful grading of aggregates, he gets 22 blocks per sack. Other makers often get only 15 to 16 blocks per sack. Mr. Warford's blocks cost him 2½ cents for cement and the others cost 3½ cents.

But appearance counts heavily. In some places a smooth block is wanted and fine material is used for appearance which makes the cement cost higher.

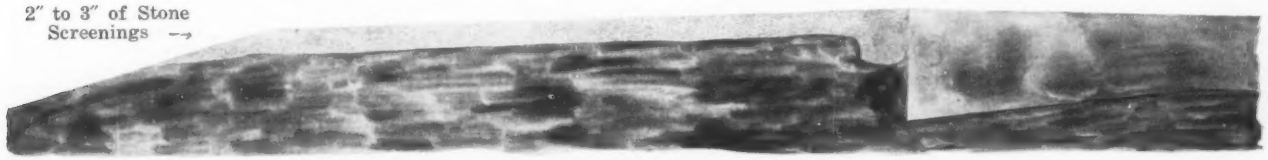

FIGURE 4
How Stone Screenings are Used for Shoulder Maintenance

Using limestone screenings pays. Screenings with 8% through 100 added to the mixture, made a slumping block stand up. The fine limestone dust has a cementing value. Blocks made of one-third limestone screenings and two-thirds sand and pebbles were better than blocks made with either screenings or sand and pebbles alone. In one test there was considerable breakage with the sand and pebble-aggregate, but no breakage when the aggregate contained limestone screenings.

TABLE I

TESTS OF DIFFERENT GRADINGS OF FINE AND COARSE AGGREGATE

Compression tests of 8 by 8 by 16-in. building block.
Block made on standard stripper machine by regular plant operatives.
Machine-mixed concrete.
Mix by volume of dry rodded aggregates.
Each value for compressive strength is the average of 4 specimens.
Time of mixing, 3 minutes.
Consistency: as wet as method of manufacture permitted.
Curing: 15 hours in steam, remainder of time in air.
Age at test: 28 days.

Ref. No.	Dry Rodded Aggr. Proportion % by Vol. Fine	Coarse	Fineness Modulus of Mix	Absorption Per cent 1-5	1-7	1-9	Compressive Strength lb. per sq. in. Net Area 1-5	1-7	1-9	Gross Area 1-5	1-7	1-9
Ohio River Sand 0-3/16 in. and Ohio River Pebbles												
22-24	100	0	2.63	7.7	8.9	9.9	988	676	419	624	425	264
25-27	74	26	3.50	7.1	8.2	8.3	1701	926	583	1070	583	368
28-30	67	33	3.75	7.6	8.0	7.6	2028	1066	692	1279	692	435
31-33	59	41	4.00	5.8	7.2	7.4	1859	1184	783	1169	748	493
34-36	52	48	4.25	5.5	6.2	6.4	1698	1228	800	1085	775	504
37-39	45	55	4.50	5.4	5.2	6.7	1753	1642	929	1102	1037	586
40-42	37	63	4.75	4.8	5.2	5.7	2243	1611	1203	1412	1015	807
43-45	30	70	5.00	4.7	4.5	4.5	2571	1944	1567	1620	1225	985
Ohio River Sand 0-3/16 in. and Slag 3/8 in.												
22-24	100	0	2.63	7.7	8.9	9.9	988	676	419	624	425	264
46-48	67	33	3.50	7.2	8.0	8.7	2008	1095	592	1263	690	372
49-51	49	51	4.00	7.0	7.8	8.9	2128	1271	920	1338	803	581
52-54	30	70	4.50	6.0	6.4	7.4	2334	2028	1263	1475	1282	799
Ohio River Sand 0-3/16 in. and Bluestone												
22-24	100	0	2.63	7.7	8.9	9.9	988	676	419	624	425	264
55-57	77	23	3.50	8.7	8.1	8.5	1634	893	495	1030	563	312
58-60	64	36	4.00	7.4	7.8	7.6	1704	1203	949	1075	759	597
61-63	50	50	4.50	6.5	7.7	7.2	2253	1320	793	1424	832	499
64-66	37	63	5.00	5.0	5.5	6.8	2311	1614	1096	1455	1016	691
Ohio River Sand 0-3/16 in. and Limestone 1/4-3/8 in.												
22-24	100	0	2.63	7.7	8.9	9.9	988	676	419	624	425	264
67-69	72	28	3.50	6.5	7.5	7.8	1648	1084	720	1036	683	453
70-72	56	44	4.00	5.5	6.8	7.1	1844	1319	858	1163	832	541
73-75	40	60	4.50	5.5	5.3	6.3	2272	1780	1114	1432	1120	701
Limestone 0-1/4 in. and Limestone 1/4-3/8 in.												
13-15	100	0	2.81	8.0	9.3	9.6	1965	1538	1225	1239	957	771
76-78	77	23	3.50	5.9	6.7	6.7	2108	1358	1394	1326	856	879
79-81	60	40	4.00	5.7	5.9	6.7	2010	1527	1225	1267	938	773
82-84	43	57	4.50	4.9	5.4	6.2	1893	1487	1001	1193	939	633
Slag Sand and Slag 3/4 in.												
4-6	100	0	3.24	10.9	12.2	12.5	1277	812	552	805	512	348
85-87	92	8	3.50	8.4	9.6	11.6	1439	1097	579	906	692	366
88-90	77	23	4.00	8.8	8.1	11.5	1731	1055	712	1092	664	449
91-93	62	38	4.50	7.1	7.9	8.6	2066	1544	1190	1299	975	752
94-96	46	54	5.00	8.5	8.2	7.6	2637	1742	1158	1663	1099	729
Crushed Sand and Ohio River Pebbles												
7-9	100	0	3.74	7.4	8.0	8.0	1873	1345	1029	1180	848	649
97-99	88	12	4.00	6.4	7.6	7.6	2659	1234	879	1675	777	555
100-102	66	34	4.50	5.8	6.5	6.5	2066	1491	1172	1305	942	741
103-105	44	56	5.00	5.1	4.6	..	2243	1751	....	1417	1101	...

From a paper by Lacy Petton, Benton, Illinois:

Fineness modulus is another one of these boys with whom I am not well acquainted, said the paper. The mix used by its author was:

4½ cu. ft. ¼ in. to ⅝ in. pebbles.
4½ cu. ft. ¼ in. and finer sand.
1½ cu. ft. limestone screenings.
1 cu. ft. cement.

This gave 22 block to the bag of cement. Limestone screenings were added to promote workability. The concrete had a 28-day strength of 1300 lb.

From a paper by W. D. M. Allan, Portland Cement Association, Chicago, before the National Crushed Stone Association's Tenth Annual Convention:

GRADED LIMESTONE SCREENINGS AN EXCELLENT AGGREGATE

In this discussion I am particularly interested in limestone screenings, and just to be a little more definite I am going to assume that these screenings will be graded about as follows, 5 to 10% retained on a ¼-in. screen and from 5 to 20% passing a 100-mesh screen. I know that in a good many communities the producers of crushed stone have found the concrete products market a very good one and in other communities producers of crushed stone manufacture concrete products. Sometimes the screenings are used about half and half with ⅜-in. crushed stone, and in other cases the screenings are mixed with coarse torpedo sand.

Limestone screenings in concrete block serve in general to make a lighter colored product, which in many markets is considered highly desirable, and they serve to make a more workable mix, that will stand rougher usage in moving the green product from the machine to the curing room. These two claims have been put forth by the users of crushed stone screenings as their principal advantages.

Screenings other than limestone are also of value and are used successfully in block manufacture.

Stone screenings have other uses for which they are extremely well suited, such as in the production of sidewalks, sand asphalt roads, for use in private driveways, and the paving of gasoline stations. No doubt still other uses will readily suggest themselves, such as in concrete floors of buildings.

Agricultural Limestone

The use of fine limestone screenings for agricultural limestone is, of course, well-known and such material is invaluable for the correction of an acid condition of the soil and for the purpose of making it more friable and better able to support plant life.

Screenings are too often a waste product at crushing plants and this should not be the case in view of the excellent qualities possessed by this material for a great many purposes.

Crushed Stone Used to Give Non-Skid Surface

THE following article is from a recent issue of the Bakersfield *Californian*:

"The State of California will take a hand in taming the dangerous straight-away between Bakersfield and Grapevine Grade, wet-weather nemesis of hundreds of motorists during the last decade, it was revealed today in a message from the office of C. H. Purcell, State Highway Engineer at Sacramento. Placing a special nonskid surface over the most dangerous portions of the 29-mile stretch will begin within the next few weeks and before the rainy season starts in, Mr. Purcell stated.

"A total of about six miles of the highway will be made skid proof. The sections to be treated will include the points where most of the serious accidents have occurred during past wet seasons, particularly at the foot of Grapevine Grade and farther north in the adobe sections.

"Experts aver that the adobe land surrounding the highway causes virtually all of the wet-weather accidents. Dust from this land settles upon the highway and at the first shower, until the road is washed clean, this dust becomes the most slippery surface imaginable, engineers say.

"Literally scores of automobiles have skidded and overturned at these points, statistics show, while untold hundreds have narrowly averted a similar fate. The accident and death toll, reported to be higher than on any similar stretch of open highway in the country, brought the necessity for action to the attention of the state and the construction which will begin soon is the result.

" 'The nonskid effect,' Mr. Purcell says, 'will be secured by covering a light application of heavy asphaltic oil with three-fourths to one-half inch crushed rock, which is followed by rolling. It is hoped this type surface will tend to appreciably decrease hazards in this section for some time.' "

The angularity of crushed stone is an important asset. This quality is the basis for the high stability of crushed stone railroad ballast, traffic bound and bituminous types of roads. It also accounts for the exceptionally high beam strength of crushed stone concrete, a property of great value in pavements.

Manufacturers' Division Holds Annual Dinner Meeting

ON the evening of October 25, at the Hotel Pennsylvania, New York City, the Manufacturers' Division of the National Crushed Stone Association held its annual dinner meeting with approximately ninety present, which represented the largest attendance in the history of the Division. In addition to representatives of the various firms composing the Manufacturers' Division there were also present members of the Executive Committee of the National Association and a number of members of the New York State Crushed Stone Association, both of which groups had met earlier in the day.

Due to the temporary indisposition of E. G. Lewis, Bucyrus-Erie Company, Chairman of the Division, H. M. Davison, The Harnischfeger Corporation, assumed the role of toastmaster in his stead. Mr. Davison handled his difficult task with characteristic grace and courtesy and as a "pinch-hitter" qualified par excellence.

As has been the custom in the past at this annual dinner "formal business" was out of order, the entire evening being devoted to having a general good time. Mr. Davison after opening the meeting with a short address called upon a number of those present to give talks, including W. F. Wise, President of the Association, O. M. Graves, E. J. Krause and John Rice, past presidents, F. T. Gucker, Treasurer, H. E. Bair and A. L. Worthen, members of the Executive Committee and A. T. Goldbeck, Director of the Bureau of Engineering. J. R. Boyd, Secretary of the Association, outlined briefly the plans which had so far been made for the next annual convention to be held in Cincinnati during January.

All arrangements for the dinner as usual were placed in the capable hands of Gordon Buchanan and if possible he excelled his past performance in making the dinner a most complete success.

The manufacturers were particularly fortunate in having as their guests almost the entire membership of the Executive Committee of the National Association as well as a goodly number of the members of the New York Association. Last year's meeting was the first occasion when the monthly meeting of the New York State Crushed Stone Association was scheduled for the same day as the Manufacturers' Division dinner and this arrangement was welcomed so wholeheartedly by both groups that the New York Association again scheduled their meeting coincident with the manufacturers' dinner. By scheduling these two meetings in New York at the same time it is possible for the manufacturers and members of the New York group to make contacts which would otherwise be impossible, except at the time of the annual meeting and it is hoped now that this plan has been worked successfully on two occasions that this will serve to establish it as a precedent.

Following is a list of those who were present at the meeting:

Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin.
G. W. Maisak
H. W. Erickson
W. C. MacEwen

Atlas Powder Co., Wilmington, Delaware.
A. D. Hammond

Earle C. Bacon, Inc., 26 Cortlandt St., New York City.
S. F. Macpeak
W. H. Milroy
W. V. Pietsch

C. G. Buchanan Co., Inc., 90 West St., New York City.
Gordon Buchanan
G. W. Flounders
G. H. Keppel

Bucyrus-Erie Co., Milwaukee, Wisconsin.
R. W. Conant

Cross Engineering Co., Carbondale, Pa.
W. S. Nicol

Detachable Bit Corp. of America, 25 Broadway New York City.
W. C. Rea
R. W. Sanders

E. I. duPont de Nemours & Co., Wilmington, Delaware.
T. M. Garrett
J. A. Lang
S. R. Russell
E. T. Wolf

Easton Car and Construction Co., Easton, Pa.
J. C. Farrell

Frog, Switch and Mfg. Co.,—Manganese Steel Forge Co., Philadelphia, Pa.
E. L. Pemberton

Gardner-Denver Co., Denver, Colorado.
C. E. Kaiser

Gill Rock Drill Co., Lebanon, Pa.
Fred A. Gill

Harnischfeger Sales Corp., Milwaukee, Wisconsin.
H. M. Davison
Mr. Deephouse

Hendrick Mfg. Co., Carbondale, Pa.
B. G. Dann

Hercules Powder Co., Wilmington, Delaware.
S. A. Johnson

Ingersoll-Rand Co., 11 Broadway, New York City.
A. A. Holland
E. H. Paull
J. M. Wells
Kennedy-Van Saun Mfg. and Engr. Co., 50 Church St., New York City.
C. A. Adams
Keystone Lubricating Co., Philadelphia, Pa.
Leo Englander
R. C. Smith
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
Wm. A. Schnell
Loomis Machine Co., Tiffin, Ohio.
J. Reynard
Mack-International Motor Truck Corp., 42nd and Woodland Ave., Philadelphia, Pa.
F. B. Barnitz
Earl B. Hill
W. B. Jupp
C. W. MacMillen
E. M. Post, Jr.
H. L. Waehling
F. A. Warner
Marion Steam Shovel Co., Marion, Ohio.
R. S. Johnson
W. N. Westland
McLanahan and Stone Machine Co., Hollidaysburg, Pa.
A. H. McLanahan
Ward McLanahan
Niagara Concrete Mixer Co., 40 Pearl St., Buffalo, N. Y.
S. C. Hodge
F. J. Morrissen
Nordberg Mfg. Co., Milwaukee, Wisconsin.
L. D. Hudson
Pit and Quarry, Rand-McNally Bldg., Chicago, Illinois.
L. M. Weiss
Robins Conveying Belt Co., 15 Park Row, New York City.
J. H. Robins
M. S. Lambert
Rock Products, 542 S. Dearborn St., Chicago, Ill.
F. S. Peters
N. C. Rockwood
C. L. Walker
Ross Screen and Feeder Co., 247 Park Ave., New York City.
E. Webster
Sanderson-Cyclone Drill Co., Orrville, Ohio.
W. F. Nothacker
Traylor Engr. and Mfg. Co., Allentown, Pa.
D. A. Cheyette
Westinghouse Electric and Mfg. Co., 150 Broadway, New York City.
B. L. Clegg
C. C. Bawden

OFFICERS OF ASSOCIATION AND MEMBERS OF EXECUTIVE COMMITTEE

W. F. Wise, President, Southwest Stone Co., Dallas, Texas.
F. T. Gucker, Treasurer, John T. Dyer Quarry Co., Norristown, Pa.
H. E. Bair, The France Stone Co., Toledo, Ohio.
O. M. Graves, The General Crushed Stone Co., Easton, Pa.
E. J. Krause, Columbia Quarry Co., St. Louis, Missouri.
A. L. Worthen, Connecticut Quarries Co., Inc., New Haven, Connecticut.
A. T. Goldbeck, Director, Bureau of Engineering, Merchandise Bldg., Washington, D. C.
J. R. Boyd, Secretary, Merchandise Building, Washington, D. C.

MEMBERS OF NEW YORK STATE CRUSHED STONE ASSOCIATION

J. R. Callanan, Callanan Road Improvement Co., South Bethlehem, N. Y.
W. W. Duff, Lake Erie Limestone Co., Youngstown, Ohio.
A. J. Hooker, Buffalo Crushed Stone Co., Buffalo, N. Y.
F. S. Jones, General Crushed Stone Co., Easton, Pa.
G. J. Murphy, General Crushed Stone Co., Little Falls, N. Y.
A. S. Owens, Eastern Rock Products, Inc., Schenectady, N. Y.
F. C. Owens, General Crushed Stone Co., Auburn, N. Y.
C. L. Petzel, New York Trap Rock Corp., 250 Park Ave., New York City.
John Rice, General Crushed Stone Co., Easton, Pa.
John Rice, Jr., General Crushed Stone Co., Easton, Pa.
H. J. Russell, Jointa Lime Co., Glen Falls, N. Y.
A. G. Seitz, General Crushed Stone Co., Syracuse, N. Y.
G. E. Schaefer, General Crushed Stone Co., Rochester, N. Y.

Quarry Section Elects New Officers

AT the annual meeting of the Quarry Section of the National Safety Council held in Chicago, October 2, the following officers and members of the Executive Committee were elected for the ensuing year:

A. L. Worthen, Chairman, The Connecticut Quarries Co., 67 Church St., New Haven, Conn.
H. F. Yotter, Vice-Chairman, The General Crushed Stone Co., Drake Bldg., Easton, Pa.
J. R. Boyd, Secretary, The National Crushed Stone Ass'n, Merchandise Bldg., Washington, D. C.
W. W. Adams, Statistics, United States Bureau of Mines, Washington, D. C.
V. P. Ahern, Publicity, The National Sand and Gravel Ass'n, Munsey Bldg., Washington, D. C.

Since the Chicago meeting, the following have been appointed as members of the Executive Committee:

R. E. Colville, Retiring Chairman, United States Gypsum Co., Chicago, Ill.
Otho M. Graves, Vice-President and General Manager, The General Crushed Stone Co., Drake Bldg., Easton, Pa.
Norman G. Hough, The National Lime Ass'n, 927 15th St., N. W., Washington, D. C.

A rising vote of appreciation was extended to Mr. Colville, the retiring Chairman, for the excellent work accomplished under his direction during the past year.

Mr. Worthen is one of the outstanding quarry executives of the New England Territory, and is unusually well qualified to assume the responsibility of the chairmanship. In conducting the work of the Section for the coming year he will have the enthusiastic support of the newly elected officers and executive committee. With the full cooperation of the members of the Section a year of real accomplishment seems assured.

Trade Practice Conference Question Box

EDITOR'S NOTE:

In connection with the forthcoming trade practice conference of the entire crushed stone industry to be held at the Hotel Gibson, Cincinnati, on January 23, 1930, there undoubtedly exists in the minds of many crushed stone producers uncertainty as to the applicability and interpretation of the resolutions covering the uneconomic and unfair trade practices at present operative in the crushed stone industry. With this thought in mind it is proposed to run in the columns of "The Crushed Stone Journal" between now and the time of the trade practice conference questions relating to definite and specific practices covered by these resolutions and also to give authoritative answers to such questions.

In this issue therefore we are giving five questions received from various members and in the light of past experience what would seem to be correct answers to these questions. In order to make this column of the most possible benefit, we urgently suggest that all producers forward to the editor of the "Journal" questions regarding specific practices about which they desire definite information. From the questions submitted, we will select as many as space will permit and give the best possible answers. Through the cooperation of the industry in submitting such questions it is hoped that in this column many points which are at present not clear may be straightened out before the time of the conference in January. It will be remembered that the complete report of the trade practice committee in which all of the resolutions so far tentatively adopted were printed was given in the July issue of the "Journal."

Question No. 1

A contractor verbally places his order for 10,000 tons of stone with a salesman representing Company A. Sometime later, before shipments have started, he informs the Company that a salesman representing Company B has offered him the tonnage required at a price 10 cents per ton lower, and asks if Company A is willing to reduce its price equally. If Company A refuses to do so, can it hold the contractor to the terms of the order mutually understood and agreed upon, although not reduced to writing? Should the contractor place his order with Company B, is that Company, as well as the contractor, liable at law for damages to Company A? Has Company B under such circumstances been guilty of an unfair trade practice within the intent and meaning of Rule 1, under Group 1?

Answer:

For the purpose of Rule 1 of the proposed resolutions, it is immaterial whether the contract in question is oral or in writing. The significance is to be found in the fact that there is an understanding between buyer and seller—a "meeting of minds" as it were—and that this understanding or agreement is sufficiently definite that, in case of the refusal of either party to perform, the other may recover damages in the courts.

If in the present instance there is full agreement between Company A and the contractor with respect to all phases of the order and this order has been accepted by Company A, it would seem clear that Company A may recover damages in case the contractor refuses to perform. Further, if the contractor not only refuses to perform but places his order with Company B which had previous knowledge of the existence of the agreement with Company A, it would seem that either party is subject to suit, the contractor for breaking his contract and Company B for inducing breach of such contract. Moreover, under the circumstances last mentioned, Company B would be considered as violating Rule No. 1, and therefore engaged in an unfair trade practice.

Question No. 2

Company A and Company B each quoted a contractor the same price on several thousand tons of ballast. The contractor also required two or three hundred tons of screenings, Company A quoting on this material the customary market price. Company B, however, had a large stock of screenings on hand, was daily producing more than the market could absorb, consequently was very glad to get rid of a few hundred tons, and quoted a price of 10 cents per ton. As a consequence, the contractor placed his order with Company B. Company A maintained that to quote such a ridiculously low price on screenings was substantially offering the screenings as a gift in order to secure the ballast order; that it was not the practice of Company B to sell screenings on such a price basis and that consequently its action in this instance partook of the nature of a secret rebate and constituted an unfair trade practice. Company B replied that it had the right to sell screenings or any other size of stone at any price it determined and that it was not guilty of an unfair trade practice as referred to in Rule 4, under Group 1. Which company is correct in its contention?

Answer:

As a general proposition, a producer may sell his products to such persons and at such prices as he may see fit. He is subject, however, to the limitations imposed by Section 2 of the Clayton Act which prohibits price discrimination as between purchasers, except for considerations of quantity, quality, etc.; he is also subject to the limitations imposed by the Federal Trade Commission Act prohibiting the use of unfair methods of competition in interstate commerce.

Secret rebates are viewed by the Federal Trade Commission as unfair competition. In the case above described, Company B undoubtedly has the right to dispose of its large stock of screenings in such manner and for such price as may be necessary to move the product. In all fairness, however, the special price made possible by the large quantity of screenings on hand should be extended to all of its customers uniformly and should not be available to one or a few customers merely as an inducement in promoting the sale of some other product. As the necessary facts are not disclosed above, it can only be said that if the action of Company B was in accord with its usual custom, little basis can be found for charging the company with giving a secret rebate. If, on the other hand, the price of 10 cents per ton was not in accord with its usual practice but was in the nature of a special concession to induce the sale of ballast, it would probably be considered as a secret rebate within the language of Rule 4.

Question No. 3

Company X consistently follows the policy of shipping stone into distant as well as local markets, but absorbing so much of the freight rate as may be necessary to equal the delivered price of its competitors, however distant the point of delivery may be from the originating plant. Should Company X change its policy so that instead of simply meeting delivered prices in distant places, it made lower prices, would it then be violating Rule 5, under Group 1, which is a restatement of Section 2 of the Clayton Act?

Answer:

Section 2 of the Clayton Act, while permitting discrimination in prices between purchasers in the same or different communities made in good faith to meet competition declares that it is unlawful for any person to discriminate in price between different purchasers, where the effect of such discrimination may be to substantially lessen competition or tend to create a monopoly, considerations of differences in quantity, quality, etc., excepted.

Whether or not the practice outlined in the above question comes within Rule 4, which is in effect a restatement of the law, is problematical. If it can be assumed that the lower prices offered by Company X resulted in price discrimination as between its customers, either in the same or different localities, and the effect of such price discrimination tended substantially to lessen competition, either among the customers or as between Company X and its competitors, the practice would seem to be condemned by Rule 4.

Question No. 4

If the defamation of a competitor or the disparagement of his materials, as referred to in Rule 7, under Group 1, can be shown to be true in fact, then do such statements constitute an unfair trade practice?

Answer:

Although from an ethical standpoint the practice condemned by Rule 7 should undoubtedly be condemned, it is generally considered that truth constitutes a defense to any charges which would be brought under this rule.

Question No. 5

Because of an excessive over-production of one size of stone, which has accumulated in stock to a considerable extent by reason of a lack of demand for this size, Company X in order to move this material sells it at a price much below the prevailing market price, and also below its own cost of production. Company Y maintains that Company X is guilty of an unfair trade practice, under Rule 8 in Group 1, because the selling of this material below cost has injured his business. Company X replies that while it may have injured the business of Company Y, the sale below cost was not made for that purpose but only to move a size which could not otherwise be sold and which was accumulated in great quantities. Has Company X been guilty of an unfair trade practice?

Answer:

The injury to Company Y in the case above outlined is clearly only incidental to the action taken by Company X and is consequently not within the provisions of Rule 8. No rule or law can prevent the owner of goods from disposing of his property under the best conditions obtainable, subject, of course, to the prohibitions against price discrimination and unfair competition mentioned in the previous answer. Rule 8 is unquestionably directed against the practice of one producer, for example, engaging in the sale of his goods below cost as a means of driving out a competitor and thereby of eliminating competition.

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J. R. BOYD, Editor

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Our Coming Annual Convention

THOSE who have attended our past conventions naturally expect our programs to be replete with talks of an interesting, instructive and inspirational character. The program for our annual convention at Cincinnati, in January, gives every promise of maintaining that same high standard of excellence.

Our convention sessions will be limited to three full days instead of three and one-half days as has sometimes been the case. The fourth day, Thursday, January 23, although not scheduled for actual convention activities, will be set aside so that all may attend the Trade Practice Conference of the Crushed Stone Industry to be called by the Federal Trade Commission.

Our convention will be opened by a welcoming address either by the Mayor or the City Manager of Cincinnati, to which Mr. E. E. Evans of Toledo, will respond. President Wise will then briefly address the assembly. As usual, reports from the Directors on business conditions throughout the country will be heard and the routine appointments of convention committees will be followed by a report by ex-President Graves on the Incorporation of the Association.

At the greeting luncheon we shall hear an exceptionally interesting and important talk on "Simplification in Industry" by Mr. R. L. Lockwood, Chief of the Division of Simplified Practice of the United States Bureau of Standards.

On Monday afternoon, the subjects covered include a paper on the protection offered materials producers by a highway bond and also another paper which probably will deal with some phase of highway engineering. This year the committees of the association have evidently accomplished a considerable amount of work which will be briefly summarized at this session. It is hoped that there will be a full discussion of these reports.

The Manufacturers' Division Exposition will be opened on Monday evening, and this year the exposition promises to be larger and better than ever before. Facilities for exhibiting are most excellent and the entire exhibit is grouped in a single room. Up to 100 booths will be required for housing the exhibits of quarry equipment and supplies. Following the opening of the exposition there will be a smoker and entertainment which will give everyone an opportunity to renew their old acquaintanceships.

Tuesday's program includes a paper on the subject of premixed concrete, illustrated by motion pictures and lantern slides. Car service will be another topic as will also the results of research in our own laboratory and their practical significance.

As usual group luncheons will be held on Tuesday, one attended by operating men, another by salesmen and still another for agstone producers. The programs of each of these three groups will be continued into the afternoon and promise some very valuable talks. A. S. Rea, Chief Engineer of the Bureau of Tests of the Ohio State Department of Highways is going to discuss with the operating men the ways in which he thinks the qualities of crushed stone might be improved. There will be a report on the mechanical elimination of dust by our committee on this subject.

The Sales Group has one paper dealing with group advertising, another on the importance of proper specifications for crushed stone and a third on stone sand, its successful use and characteristics. The Ballast Committee will also probably report at this session.

The Wednesday morning session includes a paper on sewage disposal by Samuel A. Greeley of Pearce, Greeley and Hansen, Sanitary Engineers, of Chicago. It is hoped that airport pavement construction will be discussed and also a very important investigation in concrete aggregates. The Wednesday luncheon will be held in or adjacent to the exposition room for those wishing to avail themselves of this opportunity of conferring with manufacturers of equipment.

Wednesday afternoon will be devoted to two important topics, one a report of the committee on trade practice and the other having to do with accident prevention. Ex-President Graves, Chairman of the Committee on Trade Practice, will explain his report to the convention and it is hoped that a thorough discussion will follow so that any points of difference which may exist in the minds of the members regarding the committee's report may be brought to light previous to the Trade Practice Conference to be held on the following day.

Mr. H. E. Rodes, Chairman of the Accident Prevention committee, will present his report to be followed by at least one particularly interesting paper on accident prevention work.

The Trade Practice Conference which will be called by the Federal Trade Commission for Thursday, although not properly a part of the convention activities should, none the less, be attended by the entire convention. This conference is to be set down as one of the most forward steps the crushed stone industry has ever taken. Here, for the first time the entire industry will attempt to set up rules of ethical procedure for conducting its business to which it is hoped there will be full acquiescence.

A special invitation is extended to non-member producers of crushed stone to attend all of the sessions of the convention. They will unquestionably be very agreeably surprised at the instructive and entertaining nature of the entire proceedings and at the cordial and cooperative atmosphere which always pervades our meetings.

A. R. Wilson

THE crushed stone industry will be deeply shocked and grieved to learn of the sudden death on October 19 of A. R. Wilson, president of the Granite Rock Co., Watsonville, California. For many years Mr. Wilson has been Western Regional Vice-President of the National Crushed Stone Association, an honor which he richly deserved, and he was a regular attendant at the annual conventions of the Association, where he made a host of friends. It can be truly said that all who knew him loved and admired him and he leaves a place within our ranks which it will be difficult to fill.

Iowa Leads in New Paving for 1929

IOWA leads the Nation in the amount of new paving built in 1929, although Minnesota, which paved less than half as many miles this year, has a greater total of paved mileage, according to a statement issued by the State highway department.

Iowa's construction this year amounted to 765 miles, the statement says, while Minnesota's was only 112. Illinois, which for several years has built more miles of pavement per year than any other State, this year dropped to second place with 632 miles.

Seventeen States are building more than 100 miles of pavement this year. They are: Iowa, 765; Illinois, 632; New York, 537; Pennsylvania, 500; Michigan, 474; Wisconsin, 326; Indiana, 308; Ohio, 279; Tennessee, 226; New Jersey, 222; Louisiana, 214; South Carolina, 184; Oklahoma, 178; Arkansas, 157; North Carolina, 153; Minnesota, 112; Alabama, 106.

Minnesota Reduces Costs of Concrete Paving

MINNESOTA will pay an average of $96 less per mile for 20-foot concrete pavements in 1930 than in 1929, according to figures given out by the State highway department.

Bids were opened October 29 on 138 miles of pavement to be built next year. Of this 134.1 miles are to be 20 feet wide and the total of the low bids was $2,215, 703, or an average of $16,522 per mile. One 3.9-mile stretch of 27-foot pavement will cost $93,807.

The contractors' figures include all labor and materials except cement, which is furnished by the State. The bids opened on next year's supply of cement show that this item will cost an average of $7,715 per mile for 20-foot pavement, making a total of $24,237 per mile for the completed slab. The average cost per mile of 20-foot slab built in 1929 was $24,333.

Illinois Motor Tax Brings in $18,000,000

THE automobile department in the office of the secretary of state will turn approximately $18,000,000 into the State treasury this year, and the corporation department in the same office will contribute in excess of $4,000,000, according to a statement made November 13 by William J. Stratton, secretary of state.

The money gathered by the automobile department, under the provisions of the automobile license law.

FROM the minutes of the school board of Lancaster, Ohio, in 1828, one learns that a request to use the school house for a debate, on the merits of a railroad, was incontinently refused. The minutes read, in part: "You are welcome to use the school room to debate all proper questions in but such things as railroads and telegraphs are impossibilities and rank infidelity. There is nothing in the word of God about them. If God had designed that His intelligent creatures should travel at the frightful speed of 15 miles an hour by steam, He would have foretold it through His holy prophets. It is a device of Satan to lead immortal souls down to Hell."—*The Wall Streeter.*

FLEXCO
HD Belt Fasteners
These well known fasteners stop trouble with elevator and tight butt conveyor joints. They have far more strength than needed and the pull is equalized on both sides of the belt insuring long service. Note recessed plates which embed in and compress the belt instead of pulling against the bolt holes. Stocked by leading jobbers in 5 sizes. Consultation invited.
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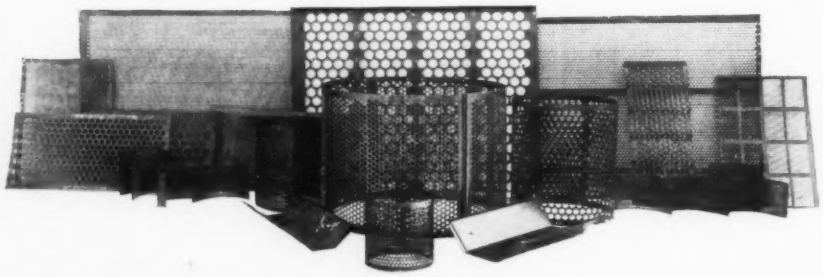

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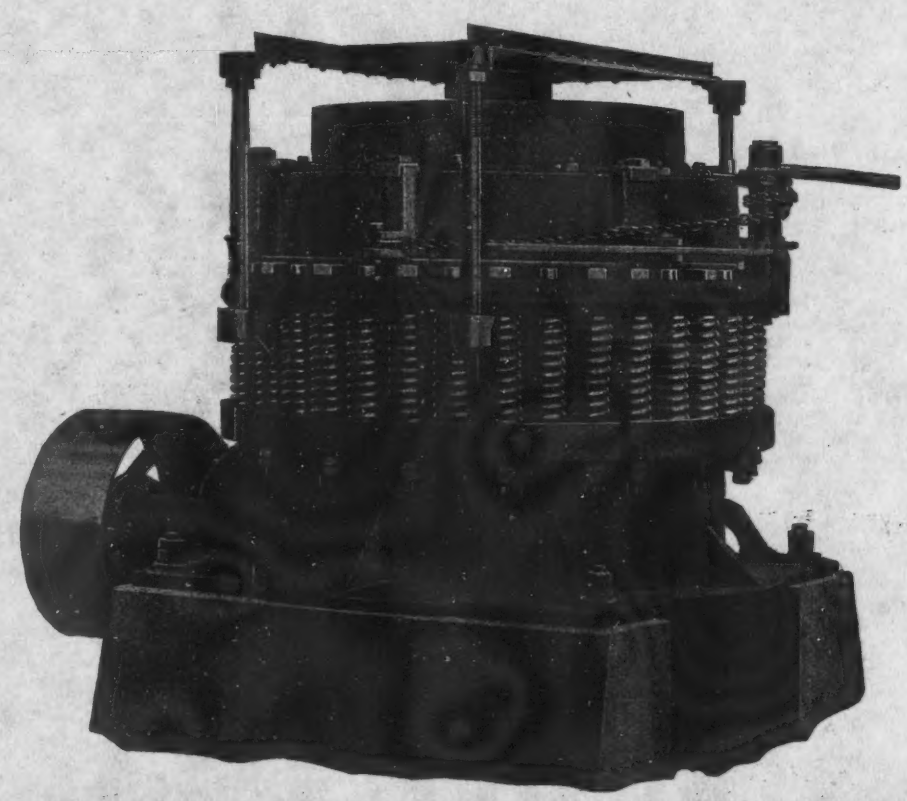
The outstanding fact shown by a sales analysis of Symons Cone Crushers is that of progressive buying. Many have bought their third and fourth machine due to the satisfaction which the original purchase gave. One large producer of crushed stone has ten in service. When consideration is given to the comparatively short time since their introduction, this is nothing short of remarkable. Surely there is no better evidence of the satisfactory performance that Symons Cone Crushers give. A Symons Crusher user is a Cone Crusher booster. • • • •



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What Practical Quarry Men Think of Cordeau-Bickford

From time to time expressions of opinion regarding CORDEAU-BICKFORD come in from the trade and comments are made in articles. Some quotations from such sources are as follows:

"We prefer CORDEAU as it is safer and the chances of misfire are practically nil."

"We use considerable of your product every year and results obtained are entirely satisfactory."

"We have been using CORDEAU-BICKFORD for a number of years and are glad to state that our experience with it has been very satisfactory and believe that it results in reducing our cost of blasting."

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